THE DELAWARE AND HUDSON RAILROAD BULLETIN

A MOUNTAIN STREAM
CROWN POINT, N.Y.

SEPTEMBER 1, 1931

IF—

IF all the skies were sunshine,
Our faces would be fain
To feel once more upon them
The cooling splash of rain.

If all the world were music,
Our hearts would often long
For one sweet strain of silence
To break the endless song.

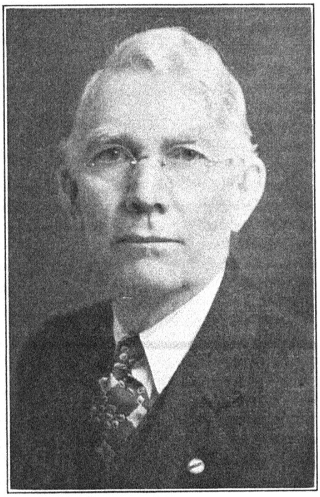
If life were always merry,
Our souls would seek relief
And rest from happy laughter
In the quiet arms of grief.

—HENRY VAN DYKE.

The
DELAWARE AND HUDSON RAILROAD
CORPORATION
BULLETIN

Worked in "Dog's Nest"

Veteran Railroader's First Position Was at Canal Coal Loading Basin



JOHN J. KALLIGAN

BENT over a chute of flowing anthracite, under the watchful eye of a coal inspector JOHN KALLIGAN initiated his 46-year career with the Delaware and Hudson as a slate picker at Honesdale, Pa., in 1874, at the age of 13. The coal after being dumped from the Gravity Railroad cars on the slope of the hill overlooking the present site of the passenger station, passed through a series of chutes to the boats in the canal basin. As the anthracite rattled down the chutes over the portion of the basin known as the "dog's nest," it passed by a group of eight or ten boys, seated in pairs on an elevated platform. Beneath there was room for three boats, each to be loaded with a different size of coal.

Retarding the flow of the black diamonds with their heavy leather shoes, the boys removed and threw into an empty car beside them what rock and slate had escaped the eyes of similarly employed youths in the breakers at Carbondale. This refuse was later removed to the Gravity Railroad to be used for ballast and for filling ravines. After it had passed each successive pair of boys, and had undergone a final washing under a heavy stream of water pouring from a pipe at their backs, the coal dropped into the boats below.

JOHN'S father was a gauger at the docks. It was his duty to stand in a boat while it was being loaded, holding a pole notched to indicate the depth of coal aboard at all times. When it reached a level equivalent to the boat's capacity, he signaled the chute operator to stop. Through him JOHN learned much about canalling, and after a short time in this and other positions at the canal terminal, he began running on a boat between Honesdale and Rondout.

Many were the exciting races between rival boatmen on the level stretches between the 110 locks on the 108-mile canal. Ordinarily it took from four to five days to haul a boat that distance with a team of two horses, although when traffic was brisk the entire trip was sometimes made without removing the horses' harnesses, thereby cutting the running time considerably. The levels varied in length: there was one seventeen miles long, one twelve, several four, while the balance were all shorter. When night descended they pressed on until a lock was reached, no matter if it took until morning, so that another boat could not pass theirs while they slept.

At times as many as eight or ten boats would be grouped at a lock waiting to be "locked through." The horses were so well trained that they would stop a safe distance from the boat ahead. While awaiting their turn, the animals grazed beside the towpath.

"Come ahead loaded boat," shouted from the lock, meant that the operator was ready for the next Rondout-bound boat. Immediately upon hearing this cry, the horses would start up, whether or not the driver was on hand to urge them forward.

MR. KALLIGAN recalls an incident which clearly shows the high intelligence of the canal horses. At intervals along the canal a man with a horse and two-wheeled cart was stationed; it was his duty to locate and report any leaks in the canal walls, local water shortages, or infractions of the rules. To prevent trespassers driving carriages along the towpath, closely-spaced posts were driven in the ground beside the canal.

Drivers were under strict orders to be out on the towpath when the boat was in motion, although many of the horses were so well trained that they would make the entire trip without mishap if left to themselves. One day while the driver was eating his dinner aboard the boat, the horse passed on the outside of one of these posts. Had this fact been unnoticed, when the boat passed the post, the fouled rope would have pulled the horse into the canal. One of the inspectors, driving up from the opposite direction, saw what was about to happen.

"Get back around that post," he bellowed at the top of his voice. The animal stopped, wheeled about, walked around the post again, and proceeded. The inspector, amused by the incident, laughed heartily and cautioned the driver as the boat went by.

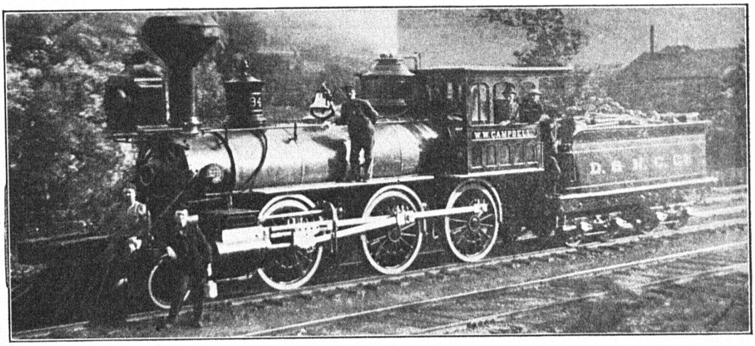
If a canaller so desired, he could purchase a boat from the company. He was paid 65 cents per ton of coal transported, a boat load approximating 130 tons. Twenty dollars was deducted from his earnings for each trip until the team and boat were paid for. He was then given a new boat free of charge.

On the day that President Garfield was assassinated, in 1881, MR. KALLIGAN completed his last trip on the canal. That fall he entered the employ of the Erie Railroad at Susquehanna, Pa., where he eventually became conductor of way freight operating between Susquehanna and Carbondale. Late in 1883, he took a position in a boiler shop at Roanoke, Va., until March, 1884.

During the afternoon of April 1, 1884, MR. KALLIGAN, then 23 years old, walked into the office of Yardmaster Howard Evans, at Oneonta, to apply for a position in the train service. He was told to report for duty the following morning with a crew running between Oneonta and Delanson.

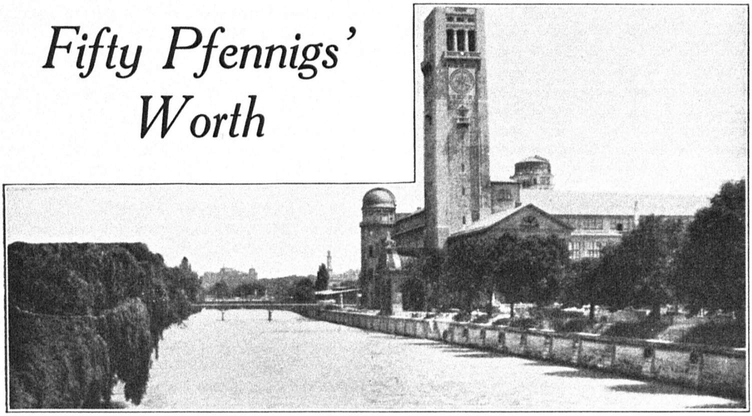
At that time two freight trains were operated between Oneonta and Albany, while all other Oneonta men "turned" at Quaker Street, now Delanson. A round trip between Oneonta and Delanson or Oneonta and Binghamton was considered one and one-quarter days' work; Oneonta to Albany and return

(Continued on page 268)



Albany and Susquehanna Engine 94 was built in the Dickson Plant, Scranton, Pa. Seated on pilot is Frank W. Brosmer; standing on ground, MR. KALLIGAN; *on running-board, William Fellows, fireman. The men in the cab are unknown.*

Fifty Pfennigs' Worth



Deutsches Museum, Munich

LAST summer I heard of a bridal couple who, on an all too short honeymoon, visited the Deutsches Museum in Munich and spent three happy days pushing the buttons that started machines. Anything that would bring these starry-eyed wanderers back to terra firma for that length of time must be worth seeing, and so I started for Munich to see what the Deutsches Museum had to offer.

The Museum, a huge building of three and four stories covering about nine acres of floor space, is located on the Museum Insel, one of the two long islands in the River Isar that separate Munich into two parts. The Museum is organized with the thoroughness that one expects of German scientists. It is divided into the following departments: administration, business office, new building, science, technology, industry, library, and workshop.

Space allows me to describe in detail only a few of these departments. Geology seems to be a natural beginning. We start with descriptive exhibits of the structure of the earth, its strata as represented by huge sections, and its raw materials. From these exhibits it is but a step to the models showing the influence of water, ice, and wind on the earth's surface. The action of volcanos and earthquakes is made clear as well as the origin of mountains, and a large schematic section of the earth is presented showing the sedimentary layers and their corresponding fossils.

In adjacent rooms are depicted the search, production, and utilization of useful minerals. Portions of actual mines are presented with startling realism. Mining machinery, ore dressing by wet, mechanical, and electro-magnetic systems can be operated by the visitor as can the jigging machines, shaking tables, and appliances for amalgamation and roasting processes. These mining exhibits date from the earliest times and methods and show their development into the most modern. The metallurgical department shows the production of lead, copper, zinc, mercury, iron, steel, and other metals.

The next group of exhibits shows the treatment of metals (from old to modern times) by casting, forging, and machine tools. Practically all of the machines can be set in motion by the observer. The foundry shows the processes of moulding, smelting, and casting. Hammers are exhibited operated by hand, water, steam, and compressed air. A model rolling mill shows the fabrication of sheet iron, rails, tubes, wheels, chains, and so on, together with machines for sawing, cutting, turning, milling, and grinding metals. There is a display of methods for testing and assaying metals and finally an exhibition room of fine castings, forgings, and coins.

Each department is arranged with the same completeness of detail as this first one devoted to mining, smelting, and metal working. Every department like it is arranged historically and in every place where it is practical machines on exhibition are so devised that the student observer can operate them by pressing a button. Others are started by an attendant.

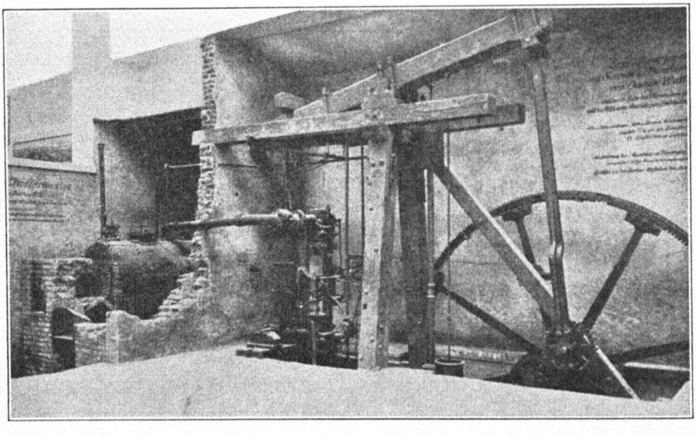
Perhaps the department that presents the best examples of operating models is the power department which shows the development of prime movers. First there are the muscle power engines such as treadmills and horse-gears; then come windmills and steam engines, with a copy of Watts' first beam engine of 1778. There is a model of the first high pressure engine with an oscillating cylinder and a water-tube boiler of 1840; a replica of the first Corliss engine in Germany; ship engine models with multiple expansion by Schichau; and copies of locomobiles and steam turbines. Then come steam boilers, hot air, gas, oil, and benzine motors, and special machines by Ericsson, Lenoir, Otto, and Diesel.

In the department of land transportation, samples of skates, skiis, and stilts show the method of foot-travel. The next group displays vehicles such as sedans, sledges, and carriages, including the gala coach and sled of King Ludwig II of Bavaria, and some of the first models of automobiles. Cugnot's steam tractor, Serpollet's first steam road carriage, Benz's benzine motor, Daimler's petrol auto, the "Protos" car which won the first round-the-world prize in 1908, and Rumpler's first stream line car of 1921 are all represented in this group.

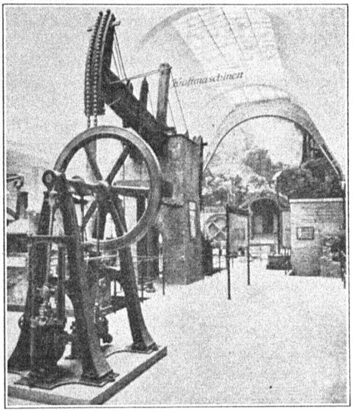
Then in another department is shown the development of the railway. There are full size models of the first locomotives (*Puffing Billy* of 1813) and other reproductions from the *Rocket* to ultra-modern type which include expansion cylinders, superheaters, sleeping cars, air brakes, and so on. There are also exhibits from the first electrical locomotive by Werner v. Siemens, 1879, to the latest electrical train with full equipment.

This study of transportation leads naturally to the next department of road building where replicas of ancient Roman roads, German planked roads (dating back to 800 B. C.), medieval mud roads, and model sections of old and new streets in German towns are exhibited. There are models of railroad construction (surface, under-ground, and elevated), mountain railways, rope railways; and models and appliances for tunnelling and bridge building. A study of hydraulic engineering displays replicas of mountain streams and river correction, ship locks and ship elevators, and models of the Rhine, Main, Danube, and Panama Canals.

The department of harbor operation shows miniature representations of the great harbors and basins of Bremen and Hamburg with beacons, buoys and signals above and below water; while in the department of ship building there are models of outrigger canoes, kayaks, and dugouts. There are also models showing the evolution of rowing and sailing vessels and many duplicates of steam vessels including the *Charlotte Dundas* of 1801 and the *Leviathan*. There are also reproductions of battleships and submarines from the Fulton boat of 1798 to the modern U-boats equipped with torpedoes and mines. One alcove shows the development of marine compasses from the dry to the floating and electric gyroscopic compass of today.



Replica of one of James Watt's engines



The Hall of Prime Movers

The department of mathematics and physics has an interesting exhibition of instruments for measuring time (sundials, hour glasses, water and oil clocks); of implements showing average time, solar time, the rise and setting of sun and moon, position of the planets, and so on. There are many beautiful watches and clocks, including the very cumbersome saddle watches of 1550 and the modern flat watch.

Another department shows the various measures of length, volume, and weight. Then follow a series of mathematical devices such as calculating machines, planimeters, compasses, and pantographs. There are also many drawings showing the evolution of descriptive geometry. Reproductions illustrating the development of the lever principle and the inclined plane, pendulum laws, gravitation, gyroscopes and their application are found in the division of mechanics.

A large alcove is devoted to the fundamental laws of hydrostatics and hydrodynamics, and to the mechanics of gases, with the original Guericke's air pump and his Madgeburg hemispheres on display. The study of heat and the laws of energy show the different methods of measuring temperature, the development of thermometers, and calorimeters. Then there is apparatus for liquefying gases, accompanied by Linde's original machine of 1895, and also by a model of Rumford's famous gun barrel boring showing the transformation of work into heat.

In the section devoted to electricity and magnetism there are found such interesting machines as Guericke's sulphur ball, the electrical machine with battery of jars used by Ohm, and the original x-ray tubes of C. W. Rontgen. In this department are popular booths demonstrating the Rontgen treatment where an attendant sends rays through visitors' hands and purses. Mme. Curie is represented by a copy of the apparatus she used in her study of radio-activity.

In the telegraphy and telephony section there is an exhibit of telegraph instruments made by Sommering, 1809, Steinheil, 1836, Morse and Siemens, and also telephone apparatus by Reis, 1863, and Bell, 1876. There are models of an exchange and of the more modern automatic exchange. Original instruments by Feddersen, Benzold, and Hertz showing the original oscillators, resonators, and parabolic mirrors, with which Hertz proved the propagation of electrical waves, were displayed in this section. In the cases are innumerable condensers, self-induction coils, spark transmitters, coherers and crystal detectors, valve receivers, amplifiers and aerials, and daily demonstrations of broadcasting by telephones, and loud speakers are given.

In the department of optics are original instruments by Frauenhofer and Kirschoff and demonstrations of the measurements of velocity and intensity of light, refraction, diffraction, and polarization with interesting demonstrations of mirrors, prisms, and lenses. Optics begin with a study of the eye and show original instruments by Helmholtz, the telestereoscope, phakoscope, and ophthalmoscope. In another alcove are sterescopes with diagrams showing the theory of colors and color contrast effects; microscopes, telescopes, with an original telescope by Frauenhofer with which the planet Neptune was first seen in 1846 A whole room is devoted to the development of projection apparatus and cameras, while adjacent rooms are devoted to telephotography, television, and acoustics.

One of the most beautiful rooms in the whole building is devoted to music with instruments ranging from the crude rattles and drums of savage tribes to the various wind, string and keyboard instruments; from the simple lyre of antiquity to the modern pipe organ and grand piano, both manual and mechanical. Skilled musicians give demonstrations on the various instruments daily to large and interested audiences.

An entire wing is devoted to building materials and buildings, starting with woods, their structure and employment; natural and artificial stones; ceramics and glass and their manufacture and use. The models of buildings start with the primitive caves and carry on through timber and masonry

(Continued on page 268)

Moving the Mountain

(Incidentally, turning it into ballast)

MOHAMMED commanded the mountain to move; since it refused, Mohammed went to the mountain. Not so the Delaware and Hudson; it is moving the mountain and, at the same time, making it useful as well as ornamental.

Just south of Comstock, N. Y. there rises a mass of gneiss, a rock consisting of orthoclase, quartz, and mica, which is commonly used for building- and flag-stones since it is found in layers or strata. When the original line of the Rensselaer and Saratoga was put through it wound sinuously around all obstructions including the rock at Comstock.

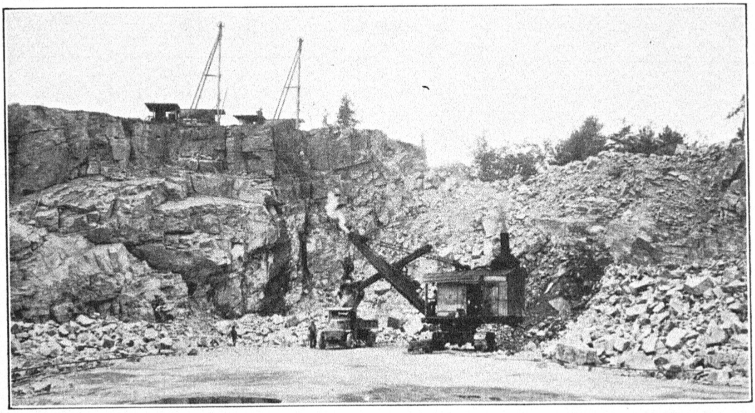
Now curves do not make for economical railroad operation. In addition to the lesser factors of increasing distance and the danger of obstructed vision, the constant friction between rails and wheels eventually wears both considerably, besides requiring additional effort on the part of the locomotive. For this reason curves in the Delaware and Hudson's track are being eliminated where practicable.

In line with this policy a highly economical solution was found for the problem of straightening the main line at this point. There was no alternative but to "move the mountain" because on the other side of the tracks the right of way is paralleled closely by a state highway and the Champlain Canal.

Another factor also entered into the situation. The change from anthracite to soft coal as locomotive fuel during the past year suddenly stopped the production of the hard coal cinders which had formerly been put to such good use as ballast to support the ties and rails. Soft coal cinders are not suitable for this purpose so it was necessary to obtain rock ballast.

Investigation developed that the rock at Comstock could be made into highly satisfactory ballast for the right of way. A contract was therefore let to the F. H. Clement Company to make the necessary cut and furnish crushed rock for the roadbed. Since this work was begun over a year ago, a total of over 24 miles of track has been rock-ballasted on the Saratoga Division, principally north of Fort Edward, although a portion of the line between Waterford Junction and Mechanicville has been reballasted with materials from Comstock.

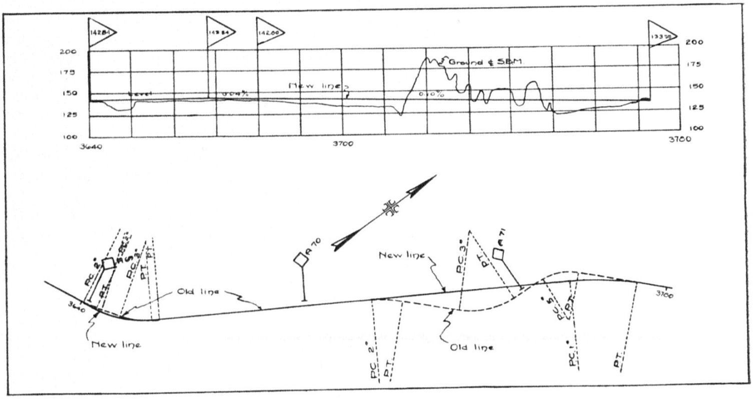
Hundreds of tons of rock are torn loose from the



Trains will run through here and the "mountain" will be ballast mountainside by charges of dynamite exploded in holes drilled to depths varying from thirty to sixty feet. As a safety measure the blasting is done under the supervision of a representative of the explosive manufacturing company. The rock thus loosened, varying in size from a few inches to a number of feet in diameter, is loaded in trucks by steam shovels for transportation to the nearby stone crushing plant.

The rough stone is first run through an electrically operated jaw-type stone crusher which reduces it to approximately six inches in diameter, the rock passing from this machine to a gyratory crusher by means of an endless rubber belt. After the second crushing it is screened to remove and return to the crushers any pieces of rock which may be oversize. The balance is conveyed through chutes to railroad cars for transportation to the point where it is to be used in the roadbed. The present capacity of the plant is about 1,000 tons per day, and it is anticipated that sufficient ballast will be produced for 75 miles of track during the operation of straightening the right of way. Additional rock will be available for future use if desired. When the cut has been completed the undesirable curves will be replaced by a straight track approximately two and one-half miles in length.

As originally operated there was a waste of about 25 per cent in the rock because pieces smaller than three-quarters of an inch in diameter were not desirable to be used as ballast, the size of which must range between three-quarters and two and one-half inches. Experimentation revealed that what is known as No. 1 stone, varying between three-eighths and three-quarters of an inch in diameter, could be used in highway construction work. Although some of this size is being used by the company, for the most part it is being sold direct from the plant. The next smaller size, a coarse sand, is also sold for use in laying concrete. It is further expected that the finest grade can be used as locomotive sand which, if successful, would leave no waste at all in the rock obtained from the cut.



Sketch showing contour and plan of re-alignment of track

Essential!

Three fellows—a doctor, an architect and a bolshevist—were talking together, and each claimed that his kind was the oldest and most important.

The doctor said:

"When Adam's side was opened to take out a rib to make a woman—that was the first surgical operation."

The architect said:

"Yes, but when the earth was made of chaos, before Adam's time, there had to be building plans—and an architect had to make them."

The bolshevist said:

"You are right, but who supplied the chaos?"

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The Art of Life

THE art of life lies largely in distinguishing the eddy from the stream. There is a current in human destiny that bears the world onward, not always in the same direction, but in spite of eddies, and turns and shallows not without a continuity. The wise man, the earnest man, the man of courage and convictions, strives while living in the present to live for something more; to see an ultimate object in his life's work in harmony with a larger purpose; and to learn from the past a wisdom that will enable him to pierce the mists of the future.—DR. A. LAWRENCE LOWELL.

Change, Not Calamity

THE impression that the railroad lines are being scrapped every day or two gains currency with the many applications by railroads for authority to abandon service at an off branch point. One of the largest of these scrappings comes with the issuance by the Interstate Commerce Commission of an order ending the career of the twenty-three mile Honesdale branch of the Delaware and Hudson railroad.

Second thought inspires the reflection, however, that the railroads, though they are undergoing changes, and are faced with all types of competition, are pretty steady on their feet—or, one should say, wheels.

The Honesdale branch that now goes to the scrap pile, for instance, is 103 years old. It was built originally to get coal from Carbondale to Honesdale, whence it was moved by the Delaware and Hudson Canal to Kingston.

Long since the old canal has passed, and the main route of the D. & H. goes north to Nineveh, thence to Cobleskill, Schenectady and Albany. Passenger service on the Honesdale branch lasted down to 1928, rounding out a century. Now the freight goes with buses and automobiles carrying the local business.

Changes in transportation are significant, and there never have been as many ways of moving persons and things as there are today. The world is wild with inventiveness. After all, it speaks well for the Honesdale branch that it has lived 103 years amid such a flux. When the automobile gets to be 103 years old—if it does—it will be a far different vehicle.

Considering that the Delaware and Hudson is rebuilding trackage north of Albany, constantly revising and improving its system, one cannot fall into the error of regarding the Honesdale branch abandonment as something serious. The railroads are carrying an enormous load of freight today, although not up to their peak marks. Ships, motor trucks, automobiles, airplanes are carrying big loads. Each performs a service, and there is every prospect that the outcome will be a greater refinement and perfection of transportation than has yet been envisioned.—*The Knickerbocker Press.*

Wasted Time

BETWEEN the ages of 20 and 30 anyone with an ambition for improvement can acquire the equivalent of a college education merely by using hours otherwise given to idleness and boredom to reading and study.

It's the old story. Most of us are careful in the expenditure of large sums of money. We have little regard for nickels, dimes, quarters, or even dollars. They slip away easily and with them go the possibility of acquiring a competence. So with our time. We waste time in half hours, perhaps the equivalent of one year in every ten. With wasted half hours goes the possibility of making of one's self the man each would like to become. —*Brown's Ink Spots.*

✣ ✣ ✣

Because you have occasional spells of despondency, don't despair. The sun has a sinking spell every night, but it rises again all right the next morning—*Anonymous*

Mr. Doe is Done For!

EVERY two minutes throughout the year somewhere in the United States a home is totally destroyed by fire; every 51 minutes an American is burned to death. Of this tremendous total of fire fatalities twenty civilians lose their lives to every fireman killed, a fact which attests the pitiful ignorance of the average citizen concerning the proper procedure in the event of a fire. The fireman has plenty of risk, but he knows the hazards; the civilian does not.

Take a typical example: John Doe is awakened out of a sound sleep in the early morning hours. He smells smoke. He leaps out of bed and yanks the door open. Poof! Mr. Doe is done for!

What happened? Well, the late Mr. Doe simply did what thousands of others have done with the same result—he inhaled a lungful of air heated to a temperature around 700 or 800 degrees and growing hotter by the second. And though the fire that heated the air was in the cellar 35 feet below, it killed him. This may all sound gruesome and unreal and unlikely. But it is exactly what causes more fire deaths than any other single happening.

If you are ever caught in this predicament, never open that door until you have felt it with your flat hand and found it cool. If it is hot, make for an open window immediately. If the height is such that you can get out safely, go. If not, wait and yell for help.

Meanwhile throw a chair through the glass and let in as much air as possible, for the average open window is never half open at best. The more air, the longer you can live there; and as long as that door is closed behind you, the time you can safely wait for rescue will be substantially prolonged. If it is open, your chances are pretty thin.

As to inflammable liquids—it is just as safe to have a case of dynamite in the home as a can of gasoline. Normal people would be careful of dynamite, but judging by the number of women we send to the hospitals, they are not in the least impressed by gasoline.

It is hard to believe that every day hundreds of women gamble their lives against the cost of having a spotted dress cleaned by a cleaning establishment. Yet women have been killed, while cleaning clothing, by the ignition of gasoline by a gas pilot light six feet away, and gasoline vapors have been known to flash back a distance of 200 feet.

Merely rubbing a dress soaked in gasoline has produced enough static electricity to blow it off. Being heavier than air, gasoline vapor accumulates at the floor level of garages, and the chap who lights a match in the garage may be signing his own death warrant.

Every fire costs every citizen money: An increase in the number of fires necessitates an increase in fire department equipment and maintenance, which now costs the people of the United States $900 per minute. And a decrease in the number of fires is certain, eventually, to decrease fire insurance rates.

Don't keep waste paper in your basement; don't permit a can of gasoline—full or nearly empty—to remain on your premises; don't permit spontaneous combustion to occur by hanging paint soaked overalls, furniture polishing cloths, or oily rags of any kind anywhere except out in the open air, out of danger. Thus you will perform a distinct public service to your community, your neighbors, and your family.—*The Saturday Evening Post.*

Land Donated for Church

PRESIDENT Philip Hone spent the week-end in Honesdale, August 21, 1831, and was much impressed by the manner in which the population, mostly Irish and Welsh miners observed the Sabbath. Each Sunday, according to Mr. Hone's diary, they proceeded to church "clean and well dressed, with long coats and gilt buttons, high shirt collars, and broaches in their bosoms."

Presumably this report was responsible for the subsequent action of the company in donating land at Carbondale, September 12, 1831, for the site of a church.

Too Fussy

Two old settlers sat smoking in a cabin far away in the backwoods. No feminine presence ever graced that settlement, and domestic arrangements were primitive and rude.

The conversation drifted from politics to cooking, and one of the confirmed bachelors said: "I got one o' them there cookery books once, but I never could do nothin' with it."

"Too much fancy work in it?" asked the other.

"You've hit it. Every one of them recipes begun in the same way. 'Take a clean dish'—and that settled me."

Fifty Pfennigs' Worth

(Continued from page 263)

buildings, and even go into the fascinating field of town planning. It takes up the evolution of lighting from the pine torch to the latest developments in electricity. With these are graphical demonstrations of heating, refrigeration, water supplies, sewage, plumbing, gas, and electrical engineering.

The department of astronomy contains planetaria of the Ptolemaic and Copernican systems. The Ptolemaic planetarium has a projecting apparatus with 119 lenses and throws the image of the star-sprinkled sky on a dome 30 feet in diameter, also showing the movement of the heavenly bodies at any desired speed. The Copernican planetarium, in a room 40 feet in diameter, is a movable model of the solar system, in which the observer is carried in a cage in a path representing the earth's orbit.

In the next eight rooms are housed the textile exhibits, showing first the various textile fibres like flax, hemp, jute, china-glass, cotton, wool, camel's hair, silk, metal filaments, and artificial silk; then the work preparatory to spinning, including cleaning, opening, carding, combing, drawing, roving, and so on. Following this is a collection of machines—hand spindles, spinning machines, and the Crompton mule Jenny of 1775. Here we find the original of the oldest German spinning machine, with 60 spindles. Then there are machines showing the preparation of flax. A whole room is devoted to the weaving of plain and fancy goods while the next three rooms show, first, the development of the sewing machine; second, the finishing of textile products including dyeing; and the third, the analyses of fabrics with testing apparatus.

Such is a partial account of the activities of the museum. The thing that impressed me most was that I, myself, unhindered, was allowed to operate so many machines and that the cutaway models showed so much of the interior mechanism that understanding was easy.

The museum has a million visitors a year, ranging from all the school children of Munich to large lecture groups.

(From an article by Harry J. Carlson in *The Technology Review.)*

Worked in "Dog's Nest"

(Continued from page 260)

was a two-day run; while an Oneonta to Nineveh trip earned only one day's pay. Conductors received $65 for a month of 26 days; trainmen were paid $45 per month.

Eighteen miles per hour was the speed limit on Susquehanna Division freight trains when MR. KALLIGAN was employed. To enforce this ruling, a speed recorder, a device connected with the axle, which drew a fluctuating line on a roll of paper, was located in the caboose. The enginemen became so adept at keeping within this speed restriction that they could run over the road, up hill and down, within a few seconds of the allotted time per mile.

The last years of MR. KALLIGAN'S service were spent on what is termed the "pull down" job in the Oneonta Yard. This crew makes up trains for the Pennsylvania Division in the lower classification yard, pulling them down to the air tracks below the Pony Farm crossing.

MR. and MRS. KALLIGAN have lived for many years in their home at 69 Elm Street, Oneonta. They have two living children, Thomas J. Kalligan, a professor in the Horace Mann High School, New York City; and Henry F. Kalligan, a passenger solicitor for the Pennsylvania Railroad.

Laugh!

LEARN to laugh. A good laugh is better than medicine.

Learn to attend strictly to your own business.

Learn to tell a story. A well-told story is as welcome as a sunbeam in a sick room.

Learn to avoid all ill-natured remarks and everything likely to create friction.

Learn the art of saying kind and encouraging things.

Learn to keep your troubles to yourself. The world is too busy to care for your ills and sorrows.

Learn to stop grumbling. If you cannot see any good in the world, keep the bad to yourself.

Learn to hide your aches and pains under a pleasant smile. No one cares whether you have the earache, headache, or rheumatism.

Learn to greet your friends with a smile. They carry too many frowns in their own hearts to be bothered with any of yours.—*Gas Service.*

Selfish Motive

Because he had crawled out on the thin ice and rescued a playmate who had broken through, little Willie was the center of a group of admiring men and women.

"Tell us, my boy, how you were brave enough to risk your life to save your friend," said one of the ladies.

"I had to," was the breathless answer. "He had my skates on."

Why the World Progresses

WHY read history? The answer is, because, if any one study is to be valued above all others, history is entitled to that preference. History is a record of human thoughts, ideas, and actions. Mind is universal; the human mind wrote history and this must read it; no man will read history aright who thinks that what was done in a remote age has any deeper sense than what he is doing today. History is always in the making.

Ancient historians used only the narrative style and mingled facts with fable and fiction; this probably prompted Henry Ford to make the remark, "History is bunk." Caesar was a narrative writer; what a wealth of knowledge he could have added to the world if he had been a true historian and told us what he thought and the reason for his actions. Instead, he, a master of military strategy, tells little about it, but spends his time telling how to build a bridge and thus becomes a nuisance to school boys who have to translate his *Commentaries*.

During the Middle Ages there were no historians worth mentioning, merely those who kept diaries from day to day. In the Eighteenth Century Gibbon wrote one of the masterpieces of historical scholarship, "The Rise and Fall of the Roman Empire." He sought out the meaning of history from the sequence of events. Not until the Nineteenth Century did history develop into a systematic science.

At one time thinkers of the highest type maintained that human actions are governed by laws as fixed and regular as those which rule in the physical world; others, equally well-equipped, argued that the determination of human movements upon any basis of scientific accuracy is impossible. This old controversy is now dissipated in the light of understanding what the science and scientific method really are. Present day historians treat history on a scientific basis and now the reader may consider the thoughts as well as the action and compare them with his own, always remembering that the human equation is such that history can never become an exact science.

Great progress has been made in the physical world but little if any in the human mind. Plato, Aristotle, Socrates and many others were as talented thinkers as any since their time; and Homer, called the first and last of the poets, first because there were none before him he could imitate, and last because there have been none since who could imitate him. It sometimes seems as if the ancients had said all that is worth saying, that the progress of the world is due to the opportunity given to the human mind to know other minds and to express its own, rather than because the quality of the mind has improved. How often when we hear a wise remark or learn of a great deed we say, "I thought of that myself." Of course you did, minds are universal and understand each other. The leader has no more brilliant ideas than many of his followers, he simply has a better opportunity to use them. No doubt many men had the same idea as Columbus but in those days it was very difficult to get a hearing. Today Rear Admiral Byrd engages the attention of the whole world.

We cannot all be leaders, for other qualities enter into the problem, but we can all be intelligent followers. But whether you elect to be a leader or a follower, read history to learn if the thought you now have is sound according to the experience of the past, then express yourself either by word or action and you will be sure to receive attention. This is not only the land, it is the age of opportunity.

The man of today has access to the accumulated knowledge of ages which is better understood and more fully explained than ever before; in addition, he has the means to communicate his thoughts to other men in ever increasing numbers. That is the reason why the world is making such rapid progress. We meet many problems today but they are to a greater or less degree the same problems that existed in the past. Will democracy fail? Not so long as the people know and understand the history of human thought and action; the demagogue depends upon the ignorance of the people for the success of his appeal. At the time when Sparta was the best-governed country in the world the King was told that his country was secure since he knew so well how to command; rather, said he, the people know so well how to obey.

Read history and learn what men equipped with a mind, just as you are equipped, have thought in the past upon subjects similar to those of today. The Bible entreats us, "Wisdom is the principal thing, therefore get wisdom and with all thy getting get understanding."

Both of these may be secured through the intelligent study of history.

—*Selected.*

Two Strange Trees

A TREE grows in South America which is called "cow tree" or "milk tree" by the natives. The milk flows at regular intervals, usually early in the morning, and the trees are tapped. It has a high nutritive value and also is used in the manufacture of cheese.

In India there is a palm tree which produces "wine." This is the kitul palm. In the course of 24 hours these trees secrete from ten to fifteen gallons each of a sweet aromatic sap which, after fermentation, is an excellent sort of palm wine.

—*The Literary Digest.*

The Saratoga and Schenectady

THE Delaware and Hudson Railroad is usually considered to be primarily a freight carrier. Consequently The Saratoga and Schenectady Railroad, one of its component parts, is unique for the reason that, for a long period, it was chiefly a passenger carrying line.

The Saratoga and Schenectady, the first piece of railroad construction among the lines which now comprise The Delaware and Hudson system, owes its existence to a combination of circumstances. The fame of the curative properties of the Saratoga Springs was quite widespread following Sir William Johnson's visit in 1767. The surrender of Burgoyne's army had also added to the prominence of the town, which in 1830 had a population of 2,000.

Schenectady, then a city of 5,000, had however, even greater interest in the new road. Prior to the opening of the Erie Canal, in 1825, freight for the west had been floated up the Mohawk River from Schenectady after having been hauled overland from Albany.

The canal put an end to this traffic, to replace which the people of Schenectady turned eagerly to the new railroad as a means of regaining the prosperity they had formerly enjoyed as a transfer point. This, rather than the development of Saratoga Springs, is considered the primary reason for the construction of the railroad.

Albany, too, was interested since the position of Saratoga Springs as a center for the produce from the surrounding country, and its rail connection via the new Mohawk and Hudson railroad gave promise of increased business for the Capital City.

Incorporated under a special act of the New York Legislature in February 1831, the company found no trouble in disposing of its capital stock which, on May 7th, was quoted at $118.50 per share. Actual construction was commenced on August 20th, President C. C. Cambreling "breaking ground" at Saratoga, under the direction of John B. Jervis as engineer in charge.

Within a year passengers were being carried between Albany and Saratoga Springs in four and one-half hours, meal stops being made at Schenectady en route. By way of explaining the fast time made it should be stated that horses were the only means of locomotion although the *De Witt Clinton* had made its thrilling trip from Albany to Schenectady on August 9, 1831.

Random Bits

There are 21 cables across the Atlantic Ocean.

Well-cut diamonds ordinarily give 175 reflections.

An Asiatic elephant weighs about 200 pounds at birth.

One bee-hive usually contains a queen, 300 or 400 drones, and 40,000 workers.

The snail travels at the average speed of one mile in 14 days.

Asparagus was originally a wild sea-coast plant, and a native of Great Britain.

A Chinaman many years before the birth of Christ, invented a machine for detecting earthquakes.

There is an alabaster mine in Italy that has been worked continuously since it was opened up by the Etruscans more than 2,000 years ago.

On the modern piano it is possible to strike 88 different notes. Yet scientists have found 11,000 different tones which can be told apart.

Before Franklin discovered that lightning is electricity, the world believed that lightning was caused by poisonous gasses exploding in the air.

Candy, which Americans eat at the rate of 13 pounds per capita per year, was first invented as a coating for bitter medicines by Hippocrates, ancient father of modern medicine.

Lake Baikal in Southern Siberia is the deepest fresh water lake in the world. Its greatest depth is over one mile. It is known as the "Holy Sea" of the Mongols.

It is estimated that 2,000 tons of rouge, 4,000 tons of face powder, 6,000 tons of bath salts, 25,000 tons of face creams and 50,000 tons of cold cream are used annually in the United States.

Clicks from the Rails

World's Richest Man

When the world's richest man, the Nizam of Hyderabad, travels, it is on a special train of 22 Pullmans; his baggage, filling four trains, is shipped in advance. He rules 13,000,000 subjects and is said to have $500,000,000 worth of gold coins in his treasury. During the World War he gave over $50,000,000 to the British Government and at one time sent a check for $500,000 to combat submarine warfare. He also insisted on paying the entire cost of two bodies of Indian troops at the front. He owns over 400 automobiles and lives in a castle costing over $1,500,000.

✣

Porters on Parade

Two columns of twelve porters each, lead by a man bearing a fac-simile of the Rock Island's monogram, each carrying a suitcase, recently participated in a parade in Chicago. A large white letter was painted on the side of ten of the suitcases to spell the words "SHIP BY RAIL", the fifth and eighth being left blank to indicate spaces between the words. This group of "red caps", which headed the Rock Island's floats, created quite a sensation.

✣

Railroad's Gas Well

A gas well which recently "came in" near the Illinois Central station at Jackson, Miss., started production at the rate of approximately 40,000 cubic feet of dry gas a day. The railroad owns a one-eighth interest in the well and is expected to use the gas for heating its local buildings.

✣

"Chief Iron Horse"

The Saskatchewan Indians have made B. T. Chappell, a Canadian National official, a full-fledged chief of their tribe. At a tribal ceremony they christened him "Chief Iron Horse" and presented him with a buckskin jacket and a headdress.

Egg Handling Record

Two box cars, each loaded to the roof with 600 cases of eggs, were derailed and thrown down an embankment in a rail collision on an eastern road recently. One came to rest on its side, the other on its roof. The cars were hoisted to the track, set on their trucks, and delivered to the consignee in New York City. Great was the surprise of the railroad's claim department when a damage claim for only $4.15 was presented.

✣

All Around Sportsman

O. J. Rowe, Assistant Superintendent of the Canadian National at Biggar, Sask., is senior tennis champion of Western Canada. In 1930 he won the waltz championship of the same territory. In addition, he owns and coaches the ice-hockey team which was runner-up in its league during the past season. Twenty years ago Mr. Rowe pitched for the baseball team which won the Panama Canal Zone championship three years in succession.

✣

Fast Rail Run

Speaking of record rail runs, the *London Times* calls attention to a trip made in July, 1907, by the Reading's *Atlantic City Flyer*, which covered the 55.5 miles between Camden and Atlantic City, N. J., in 41 minutes, averaging 81.2 miles per hour, with a load of 260 tons. It would be of great interest to know the maximum speed attained on that trip.

✣

Princess Born on Train

A daughter was born to Princess Marie Gabriele Hohenlohe Oeringen of Germany in a sleeping car of an express train as she was being rushed to a Berlin hospital. After the princess and her child reached the hospital safely, Dr. Alfred Loeser recalled that the baby entered the world while the train was running at full speed.

Speedily Built Tunnel

A one and one-half mile tunnel under the city of Quebec was recently completed by the Canadian Pacific in 11 months to connect the railroad with the new steamship dock at Wolfe's Cove, the construction of the latter being made necessary when existing port facilities were found inadequate to accommodate the new 758-foot steamer *Empress of Britain*. The two shifts, one working at each end, at times bored as much as sixteen feet a day through the solid rock.

✣

A Long Run

When a switching locomotive knocked down an aged woman at Amelu Station, France, recently, the gallant crew jumped to the ground to care for her. After her slight injuries had been treated, they found that the engineman had neglected to completely close the throttle and the engine had "run away." Two men had to run seven miles before they caught up with the iron steed.

✣

Railroad Around Building

One of the most novel railroad systems on earth is comprised in the newly designed system for keeping clean the 30,000 panes of glass in the General Electric's tank shop at Pittsfield, Mass. A monorail encircles the roof of the structure from which miniature trolley cars are suspended by chain falls, by means of which all the windows may be washed with a maximum degree of safety.

✣

Commutting Record

N. L. Spinetti, of San Jose, Cal., began commutting on the Southern Pacific between his home town and San Francisco, 47 miles away, in 1882. In the past 48 years he has not missed a single working day and has amassed a total mileage of 1,346,236 miles.

Wealth

THERE is no wealth but life. Life, including all its powers of love, of joy, and of admiration. That country is the richest which nourishes the greatest number of noble and happy human beings; that man is richest who, having perfected the functions of his own life to the utmost, has also the widest helpful influence, both personal and by means of his possessions, over the lives of others.

—JOHN RUSKIN.